

## White Flight from Racially Integrated Neighbourhoods in the 1970s: the Cleveland Experience

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**Summary.** An econometric model of 1970–80 residential turnover rates for white households is estimated for census tracts in Cuyahoga County, Cleveland, Ohio. Results indicate that 1970 tract percentage black, coupled with its interaction with estimated segregationist sentiment for white residents, was the dominant explanatory variable, although the relationship was highly non-linear. *Ceteris paribus*, the maximum rate of racially motivated turnover by whites occurred in tracts that were at least 55 per cent black in 1970, regardless of whites' segregationist sentiments. However, tracts had negligible amounts of such turnover if they had below-average levels of segregationist sentiment and blacks did not represent a majority in the tract. Application of the results to the Schelling model indicated that white neighbourhood 'tipping-out' points varied from 98 per cent to 53 per cent white, within 1 standard deviation of the mean level of segregationist sentiment. Integration management policies conducted by the suburban Shaker Heights and Cleveland Heights jurisdictions during the period did not succeed in dampening this pattern of white flight. On the contrary, *ceteris paribus*, Heights tracts had white turnover rates 16.6 percentage points greater.

Whether a significant number of white households 'flee' neighbourhoods that become racially integrated has been hotly debated by scholars over several decades. Several early studies (Mayer, 1960; Wolf, 1963; Damerell, 1968) have supported the widely-held view that the migration of successively more non-whites into a neighbourhood encouraged progressively more whites who otherwise would have remained to move out of the area. Opinion poll evidence (Farley *et al.*, 1978; Wurdock, 1981) has also indicated that many whites would become 'uncomfortable' and would consider moving if their neighbour-

hood became occupied by larger and larger percentages of non-whites. But other work has concluded that white mobility propensities in integrating areas were no higher than those which would normally have been expected in the absence of integration (Rapkin and Grigsby, 1960; Molotch, 1969, 1972; Wolf and Lebeaux, 1969; Guest and Zuiches, 1971).<sup>1</sup> In the most sophisticated study to date, Wilson (1983) discovered that white out-migration rates from integrated tracts in 10 large SMSAs during the 1960s were significantly higher than from all-white ones, but only for those tracts that would have been predicted to

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have low turnover in any event. The differential progressively disappeared when tracts of successively higher predicted turnover were contrasted.<sup>2</sup>

Furthermore, it is unclear whether any patterns of 'white flight' that have been identified prior to 1970 still persist in the more contemporary scene. There have been several important developments since 1970 which spawn this uncertainty. First, there has been a decrease in the rate of non-white population growth in most large SMSAs, compared with that evidenced during 1940–70, thereby perhaps reducing white fears of inevitable, overwhelming black housing demands upon integrated areas. Second, exceptional numbers of black households achieved conventional criteria for 'middle-class status', thereby rendering themselves more desirable potential neighbours.<sup>3</sup> Third, the expressed toleration of whites toward residential integration has accelerated (Taylor *et al.*, 1978; Converse *et al.*, 1980; Schuman *et al.*, 1985). Fourth, in many cities, community organisations have been established with the explicit goal of encouraging stable, racially integrated neighbourhoods, what I will call 'integration management' (Saltman, 1978).<sup>4</sup>

It is the purpose of this paper to investigate empirically white households' out-migration responses to neighbourhood racial integration in this contemporary psychological, demographic and institutional context. The first section describes an econometric model of whites' residential turnover rates over the course of a decade observed for census tracts. Proxies for both racial and non-racial explanatory factors are included in the model. The specification is unique in its treatment of whites' racial attitudes and of community integration management strategies. The parameters are then estimated empirically for 1970–80 using tracts in Cuyahoga County, the principal county in the Cleveland, Ohio, SMSA. Parameters for the race-related variables are used to estimate 'white-flight functions', showing how turn-

over is related to neighbourhood racial composition, *ceteris paribus*. Discussion of these results and their implications for the Schelling 'tipping' model, the 'invasion and succession' model and integration management policy follows.

## A Model of Residential Turnover of White Households

### Overview

The rate at which whites move out of a neighbourhood during a given period is determined by both racially motivated and non-racially motivated sources. The former, white flight, is influenced by white residents' perceptions and evaluations of the current and expected future racial composition of their neighbourhood. These subjective assessments are, in turn, a function of the specific racial and ethnic context of the area, white residents' attitudes towards integration, and the effectiveness of integration management policies. The latter, non-racially motivated sources, are influenced by the demographic and tenure features of white residents.<sup>5</sup> Each of these explanatory factors is discussed and modelled below.

### Data

All data used for estimating parameters of the model were gathered for Cuyahoga County, the principal county of the Cleveland, Ohio, SMSA. Blacks constituted 23 per cent of the population and 93 per cent of the minority (including Hispanic) population of the county in 1980. In this context, therefore, racial dynamics can be thought of as white–black interactions.<sup>6</sup>

Because a primary goal of this research is to explore the significance of white racial attitudes, only those Cuyahoga County tracts for which data might be viewed as indicative of white population characteristics were selected. The specific sampling rule was to select all tracts for which

specific data for blacks were available<sup>7</sup> (these could then be subtracted from totals to obtain proxies for data pertaining to whites only), plus all tracts with whites comprising a majority.<sup>8</sup> The resultant sample had  $N=257$ .<sup>9</sup> All data for this study are found in the 1970 and 1980 *Census of Population and Housing*, US Department of Commerce (1972, 1983).

Cuyahoga County was selected for study not only because of its comparatively simple, two-group interactions that take archetypical ecological forms, but also because it represented a 'natural experiment'. As explained further below, prior to 1970 two of its sizeable suburban municipalities adopted policies designed to promote and maintain stable, integrated neighbourhoods. There is, therefore, a rare opportunity to investigate whether such policies had any impact on the observed out-migration rates of white households residing within these municipalities during the 1970s.

### *Dependent Variable*

The dependent variable in the model is whites' turnover rate (WTURNOVER), defined as:

$$\text{WTURNOVER} = 100 \times [1 - (\text{number of white households in tract in 1970 still there in 1980} / \text{number of white households in tract in 1970})] \quad (1)$$

where the numerator is calculated from 1980 census data on year moved into residence (US Department of Commerce, 1983, table P-7). If all white households initially in a tract moved out during a decade, the above parenthetical term would equal 0, and WTURNOVER would take the value 100. Conversely, if no whites changed their residence, WTURNOVER would equal 0.<sup>10</sup> Note that WTURNOVER does not distinguish between alternative causes of turnover; such can be inferred from coefficients of independent variables. It also does not distinguish the race of those who replace those who leave; such is

the subject of another paper (Galster, forthcoming).

### *Independent Variables*

*White racial attitudes.* The key attitude for the study of racially motivated turnover relates to whites' aversion to residential integration—what I will call 'segregationist sentiment'. An aggregate, tract-level indicator of such sentiment was generated for this study through the following two-step procedure. The first step involved estimating a regression model that explained individual responses to the questions posed by National Opinion Research Center (NORC) interviewers concerning residential integration.<sup>11</sup> Explanatory variables included age, education, income, sex, marital status, employment status, national origin and region, and indices of status discrepancy, alienation and authoritarianism. Parameters were estimated using ordinary least-squares (OLS) for the combined 1972–83 NORC sample, stratified to include only whites living in SMSAs of 250 000 or more.<sup>12</sup>

The second step employed the coefficients of all the socio-economic and demographic variables (estimated over the NORC sample of individuals) to form weights for the tract index of segregationist sentiment. The key logic employed was this. All these variables in the first stage of estimation (with the exception of age) were specified as categorical dummy variables. By inserting the *mean* values for whites in the tract (i.e. proportions) as values for these categorical dummies, one generates the expected response for the 'average white' in the tract as a whole. This expected value was used as a proxy for the extent of segregationist sentiment in the tract (SEG). The equation used was:

$$\text{SEG} = -1.533 + 0.168 (\% \text{ with less than high school diploma}) - 0.362 (\% \text{ with college degree}) + 0.168 (\% \text{ with 1970 income below } \$5000) - 0.295 (\% \text{ with 1970 income over } \$20\,000) + 0.043 (\text{me-})$$

dian age)−0.061 (% females)−0.079 (% unemployed)+0.023 (% foreign born)

where all variables refer to whites and SEG is scaled so that the tract with the least segregationist sentiment has  $SEG=1$  (all prices US\$).<sup>13</sup>

*Racial/ethnic neighbourhood context.* The racial composition of a tract at the beginning of the decade is measured by the percentage of the population that is black (%BLACK), and its squared (%BLACK<sup>2</sup>) and cubed (%BLACK<sup>3</sup>) values. In addition, the dummy variable ADJACENT takes the value 1 if one or more adjacent tracts have 50 per cent or more black population in 1970 or become so during the 1970s (0 otherwise). It serves as a proxy for whites' unease and/or expectations associated with being located near a predominantly black area.

Both the percentage of blacks in the neighbourhood at the beginning of the decade and the existence of an adjacent, predominantly black area should be associated with an abetted sense on the part of white residents that the neighbourhood has or soon will become integrated to an undesirable extent, and, concomitantly, with greater propensities for white flight. The literature suggests that, while such white perceptions would be positively correlated with neighbourhood black percentage, the precise relationship may be non-linear. That is, a given difference in %BLACK is likely to produce different turnover rates, depending on the initial %BLACK. To allow for the greatest flexibility in estimating functional form, both the squared and cubed values are, therefore, included.

Of course, these indicators of neighbourhood racial context should not produce similar effects upon all white residents. Rather, their power should be directly related to the relevant whites' aversion to residential integration. Thus, the above four racial context variables are multiplied by SEG to produce proxies for neighbourhood racial context/segregationist senti-

ment interactive effects. Finally, SEG is included in non-interactive form to test whether segregationist sentiment has any relationship with turnover independent of racial context.<sup>14</sup>

One other adjustment to the relationship between neighbourhood racial context and white turnover is mandated. A dummy variable NOBLACKS is specified that takes the value 1 if the tract had less than 0.1 per cent black population in 1970 (0 otherwise). The inclusion of NOBLACKS in the specification allows the relationship between %BLACK and WTURNOVER to have an intercept other than the origin. Otherwise, the functional form of the model would mathematically force the conclusion that white flight occurs whenever the percentage of blacks is positive (assuming the coefficient of %BLACK is positive). One would expect that white flight only begins after some threshold percentage of blacks is exceeded (as will be discussed in detail below). Thus, a negative coefficient sign for NOBLACKS would be expected.<sup>15</sup>

Finally, white ethnicity is measured by the percentage of whites in the tract who identify countries in southern or eastern Europe as their national origin (%ETHNIC).<sup>16</sup> Higher percentages of white ethnics in an area would be predicted to be associated with lower turnover rates, presuming an attractive power for specialised cultural institutions and collective solidarity sentiments.

*Integration management policies.* During the 1970s, only two municipalities in Cuyahoga County had implemented comprehensive policies designed to create and maintain racially integrated neighbourhoods: Shaker Heights and Cleveland Heights. These two communities are adjacent to Cleveland on the east, border on the contiguous clustering of predominantly black tracts in Cleveland, and lie in the historical path of black neighbourhood sectoral expansion (Taeuber and Taeuber, 1965, ch. 5; Schwab and Marsh, 1980). During the 1960s, both towns voluntarily

initiated roughly comparable, publicly funded, comprehensive plans for integration management. Components of the plans included: (1) information dissemination designed to convince blacks that the communities welcomed integration and so convince whites that integration would not lead to racial transition; (2) aggressive enforcement of tough fair-housing laws; (3) stringent housing codes coupled with home maintenance subsidies; (4) enhancement of public service quality (especially education); and (5) housing brokerage services that explicitly attempted to allocate vacancies in ways which created and maintained racial balances in all neighbourhoods.<sup>17</sup>

To discover whether these integration management plans had any effect on whites' turnover rates, a dummy variable HEIGHTS is given the value 1 if a tract lies in either of the two above jurisdictions (0 otherwise). Independent of the current context in their particular Heights neighbourhood, it is conceivable that whites living anywhere in the Heights who disliked the (likely) prospect of more integration would be more prone to move out before the prospect became a reality. If so, the predicted coefficient sign for HEIGHTS would be positive.<sup>18</sup>

*Demographic/tenure characteristics.* Several attributes of white households are controlled for, based on established theory and evidence concerning non-racially motivated, intra-urban mobility propensities. Younger households tend to move more frequently, and aged ones are more likely to vacate their dwellings due to changes in physical capabilities and marital status, compared with those in middle life-cycle stages. The percentage of whites in the tract who are under age 25 (%YOUNG) and over age 64 (%ELDERLY) serve as respective proxies for these two aspects. Those who have occupied their home for a longer period are less likely to move in the future; thus the percentage of white households in the tract who have lived in their 1970 residence for 10 years or more (%PRE1960)

is included. Finally, because home-owners move less often than renters, the percentage of white households in the tract who are owner-occupants (%OWNERS) is employed as a control variable.

*Other non-racial control variables.* Although undoubtedly a host of unspecified factors are involved, there are two particular reasons why whites' turnover in City of Cleveland tracts might have been unusually high during the 1970s: court-ordered busing to achieve school desegregation; and extreme fiscal distress, as epitomised by the municipal bond default of 1979. To test for the impact of these events, a dummy variable (CLEVELAND) is included that takes the value 1 for all tracts located in the Cleveland jurisdiction (0 otherwise).

Given that the average black home-seeker has less purchasing power than the typical white one, it may be that whites living in neighbourhoods comprised of more expensive properties will feel less threatened by integration. That is, integration of higher-priced areas occupied by whites may be less likely to induce turnover if whites believe that the magnitude of demand by blacks is limited by financial constraints. The median 1970 value of single-family homes in the tract (MEDVALUE) is included in the model to control for this possible effect, with an expectation of a negative coefficient sign.

### *Summary of the Specification*

Given the aforementioned discussion of variables, the model to be estimated may be expressed in summary symbolic form:

$$\begin{aligned} \text{WTURNOVER} = & c \pm \% \text{BLACK} \pm \% \text{BLACK}^2 \\ & \pm \% \text{BLACK}^3 + \text{ADJACENTB} + \text{SEG} + (\text{SEG} \\ & \times \% \text{BLACK}) \pm ?(\text{SEG} \times \% \text{BLACK}^2) \pm ?(\text{SEG} \\ & \times \% \text{BLACK}^3) + (\text{SEG} \times \text{ADJACENTB}) \\ & - \text{NOBLACKS} - \% \text{ETHNIC} + \% \text{YOUNG} \\ & + \% \text{ELDERLY} - \% \text{OWNERS} - \% \text{PRE1960} \\ & + \text{CLEVELAND} - \text{MEDVALUE} \\ & + \text{HEIGHTS} + \varepsilon \end{aligned}$$

where  $c$  is a constant,  $\varepsilon$  is a random error term with the usual assumed properties, signs represent the expected correlation (if any) between the particular pair of independent and dependent variables, and all acronyms are as defined in text above.

### Empirical Results

The parameters for equation (2) as estimated via OLS are presented in Table 1, along with means and standard deviations of all independent variables. Overall, the equation explained over two-thirds of the sample variation in the dependent variable, and (with the exception of ADJACENT  $\times$  SEG) no coefficients proved statistically significant that had signs opposite strong *a priori* predictions.

The percentage of blacks in a tract in 1970 demonstrated a potent relationship with whites' turnover rates during the ensuing decade. Indeed, the linear, squared and cubed racial context variables and their counterparts interacted with SEG were statistically significant using two-tailed tests and had by far the largest beta coefficients in the model. As expected, the apparent marginal impact on turnover rates of different percentages of blacks was not constant, as shown by the coefficients of the %BLACK, %BLACK<sup>2</sup> and %BLACK<sup>3</sup> variables and their counterparts interacted with SEG. The apparent impact of ADJACENTB and its SEG-interacted counterpart, though statistically significant, was comparatively modest: at the mean value of SEG, whites' turnover from tracts adjacent to majority-black ones would differ by less than 1 percentage point from that in other tracts. This *ceteris paribus* relationship between the decadal turnover rates for whites and the initial neighbourhood racial context implies a racial motivation, and therefore can be termed a white-flight function. Several are portrayed in Figure 1.<sup>19</sup>

The crucial role played by whites' segregationist sentiments (SEG) in shaping reactions to a given neighbourhood racial

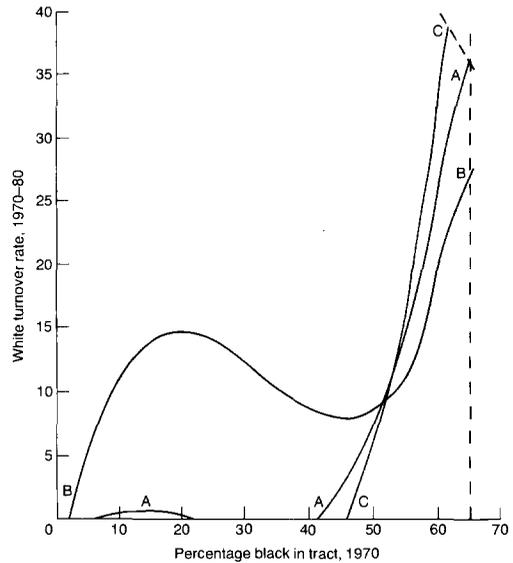


Figure 1. White 1970–80 turnover rates and 1970 tract percentage black (white-flight functions).

context can be investigated by examining the estimated white flight function for different values of SEG. For instance, line A in Figure 1 shows the white-flight function generated with SEG at its mean value; B and C do the same for SEG 1 standard deviation above and below the mean, respectively. For a tract containing whites with average segregationist sentiment (line A), virtually no substantial amounts of racially motivated turnover occurred unless the percentage of blacks exceeded 41 per cent.<sup>20</sup> By contrast, for tracts with levels of SEG 1 standard deviation lower (line C) there appears to be no racially motivated turnover of whites unless the initial percentage of blacks exceeded 47 per cent, whereupon turnover was much larger. For tracts with levels of SEG 1 standard deviation higher (line B), white flight began in tracts that were 2 per cent black, reached a local maximum rate of 14.6 per cent in those that were 19 per cent black, declined to 7.5 per cent in those that were 44 per cent black, and then rose thereafter.

Taken as a whole, the estimated white-

**Table 1.** Statistics and regression coefficients for white turnover model

Independent variable	Mean (standard deviation)	Coefficient ( <i>t</i> -ratio)
%BLACK	3.13 (8.28)	-5.39 (2.49) <sup>a</sup>
%BLACK <sup>2</sup> (× 0.1)	8.67 (38.07)	1.29 (2.06) <sup>b*</sup>
%BLACK <sup>3</sup> (× 0.0001)	0.34 (1.98)	3.66 (2.41) <sup>*</sup>
ADJACENTB	0.25 (0.43)	31.54 (1.78) <sup>b</sup>
SEG	1.49 (0.12)	10.08 (0.81)
SEG × %BLACK	4.84 (13.87)	4.15 (2.80) <sup>a*</sup>
SEG × %BLACK <sup>2</sup> (× 0.1)	13.48 (60.93)	-1.15 (2.35) <sup>b*</sup>
SEG × %BLACK <sup>3</sup> (× 0.0001)	0.53 (3.25)	6.70 (2.31) <sup>b*</sup>
SEG × ADJACENTB	0.39 (0.69)	-21.88 (1.89) <sup>c*</sup>
NOBLACKS	(0.49)	-3.08 (1.86) <sup>b</sup>
%ETHNIC	13.94 (7.96)	-0.19 (1.95) <sup>b</sup>
%YOUNG	19.48 (5.01)	0.94 (3.36) <sup>a</sup>
%ELDERLY	11.32 (5.08)	0.33 (1.12)
%OWNERS	61.03 (23.45)	-0.16 (3.38) <sup>a</sup>
%PRE1960	35.75 (11.53)	-0.23 (2.71) <sup>a</sup>
CLEVELAND	0.44 (0.50)	4.58 (2.33) <sup>a</sup>
MEDVALUE (× 0.0001)	2.18 (9.45)	2.10 (1.31) <sup>c</sup>
HEIGHTS	0.09 (0.29)	16.60 (5.73) <sup>a</sup>
Constant	n/a	47.55 (2.14) <sup>b*</sup>
<i>R</i> <sup>2</sup>	n/a	0.69
(adjusted)	n/a	(0.67)
<i>F</i> (18,238)	n/a	29.54

Significant at: <sup>a</sup> 1 per cent, <sup>b</sup> 5 per cent, <sup>c</sup> 10 per cent levels (one-tail test).

\* Two-tail test.

flight functions portrayed in Figure 1 suggest that for tracts with average or below-average segregationist sentiment, racially motivated turnover in 1970–80 was not noticeable unless the tract began with over 40 per cent blacks in 1970. Tracts with higher SEG, on the other hand, demonstrated anywhere from 5 to 15 percentage

points' more racially motivated turnover if the tract began with more than a few percentage points of black population. Regardless of SEG, however, tracts having more than 50 per cent black population in 1970 lost a substantial portion—at least 25 percentage points—of their white population due to racially motivated turnover.

Whites' demographic and tenure tract characteristics were consistently strong correlates of their turnover rates in a manner as predicted. These rates were greater (a) the larger the percentage of young residents, and (b) the smaller the percentage of ethnics, home-owners and those who had moved in prior to 1960. Turnover rates were 4.6 percentage points higher in Cleveland tracts and 2.1 percentage points lower in tracts having median values \$10 000 higher, *ceteris paribus*.

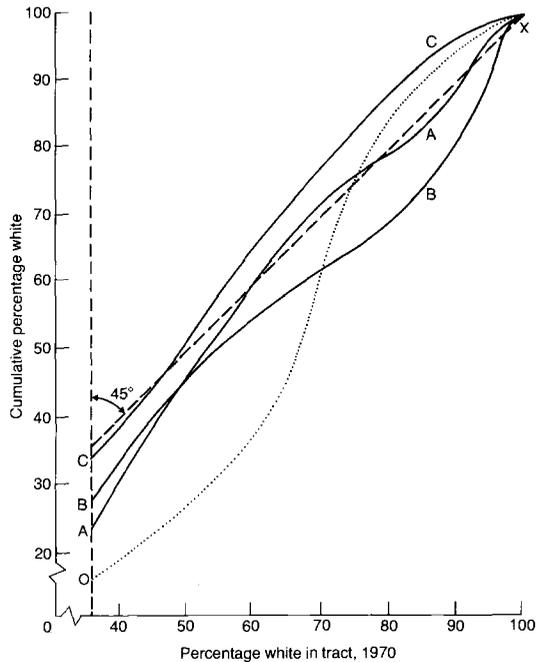
Finally, the results for the integration management variable indicated that, regardless of individual neighbourhood racial context, a tract located anywhere in the Heights could be expected to have a 16.6 percentage point higher turnover rate, *ceteris paribus*.

## Discussion

### *New Perspectives on the Schelling Tipping Model of White Flight*

Schelling (1972) has developed a dynamic model of whites moving out of an integrating area in response to their perception that it had become 'too black'.<sup>21</sup> The central construct of this model is that each white has a maximum percentage of blacks (or, equivalently, a minimum percentage of whites) that will be tolerated in the neighbourhood before out-migration will be triggered—what could be called an individual white's 'tipping-out' point.<sup>22</sup> An accumulation of such individual points, from 'most tolerant' to 'least tolerant' white, produces a cumulative distribution showing, for any given neighbourhood racial composition, the percentage of (original) white residents who would tolerate that percentage of whites. One such illustrative function (after Schelling) is shown as the dotted line O-X in Figure 2.

Now, so long as this cumulative percentage exceeds the actual percentage of whites in the neighbourhood (i.e. any time O-X is above the dashed 45° reference line in Figure 2), no racially motivated white



**Figure 2.** Cumulative distribution of individual white tipping-out points.

turnover will ensue. However, if this is not the case, those whites whose tipping-out points were currently being surpassed would move out. If the composition of households moving into such vacancies were such that the percentage of whites in the neighbourhood was reduced,<sup>23</sup> additional white flight would be triggered and the process would continue.<sup>24</sup> According to Schelling, this spasmodic white out-migration would cease only if and when there was a group of whites who would tolerate comprising a small minority in the neighbourhood (i.e. if O-X crossed the 45° line from below), or the area became all black. The percentage of whites below which such mutually reinforcing dynamics inexorably transpire (i.e. where O-X initially crosses the 45° line) may be termed the neighbourhood's white tipping-out point.

Returning to the theme of this paper, the Schelling model suggests that observed white flight rates should be a function of the relationship between the neighbourhood's cumulative distribution of white tipping-out points and its actual racial

composition. Let  $p$  be the percentage of whites in a neighbourhood and  $f(p)$  be the cumulative distribution of tipping-out points for whites, which is a function of  $p$ . Now for any  $p$  where  $f(p) < p$ , the proportion of the neighbourhood's current white residents who will tolerate  $p$  is given by  $f(p)/p$ ; the proportion who will not, by  $1 - f(p)/p$ . The whites' racially motivated turnover rate observed over the subsequent period should be identical to this latter proportion, who will not tolerate the beginning-of-period percentage of whites.<sup>25</sup> If this intolerant proportion is non-positive (i.e. if  $f(p) \geq p$ ), the observed white flight will be 0.

The parameters presented in Table 1 permit, after some assumptions, a test of the degree to which white racially motivated out-migration is accurately described by this model. Specifically, it must be recognised that the Schelling model deals with short-run dynamics in a single neighbourhood over time, whereas the econometric model estimated here deals with the decadal responses to a momentary set of alternative circumstances in a cross-section of neighbourhoods. In order to infer inter-temporal dynamics from the cross-sectional parameters, it must be assumed that the set of neighbourhoods is, *ceteris paribus*, homogeneous in the white flight-racial composition relationship. Moving to the white-flight functions portrayed in Figure 1, it is assumed further that any positive value of the observed 1970-80 racially motivated turnover rate associated with any given 1970  $p$  equals the unobserved  $100[1 - f(p)/p]$ , and that any negative value equals zero rate of such turnover.<sup>26</sup> Because the white-flight rates are known for each  $p$ ,  $f(p)$  can be calculated directly.

Three calculated  $f(p)$  functions, corresponding to the three neighbourhood segregationist sentiment values portrayed by white-flight functions A, B and C in Figure 1, are presented in Figure 2 as functions A, B and C, respectively. Note that the aforementioned procedure cannot calculate pre-

cisely the shape of the  $f(p)$  function for  $p$  ranges where white flight is non-positive. An arbitrarily smoothed function is thus drawn in these ranges. Analogously, none of the functions are drawn for values of  $p$  outside the sampled tracts' range (0-64 per cent black).

Note in Figure 2 the contrast between the estimated white-flight functions and Schelling's theoretical construct. Initially, it appears to be the case that, *ceteris paribus*, tipping-out points can, indeed, be identified once a particular degree of white segregationist sentiment in the neighbourhood has been identified. Estimates here suggest that with such sentiment well below the mean (line C), there is a strong likelihood that no white tipping-out will ensue, even with roughly equal racial proportions present. With SEG at the sample mean (line A), there appears to be temporary tipping of tracts 6-20 per cent black, but with stability restored in tracts 21-40 per cent black. This stability is fragile, however. At slightly higher levels of SEG,  $f(p)$  never again crosses the 45° line once it falls below it at a few percentage points of black population (see line B). This variability of tipping-out points according to neighbourhood whites' attitudes—98-53 per cent white within 1 standard deviation of SEG—contrasts strongly with the claims of Taeuber and Taeuber (1965, ch. 1) and Taub *et al.* (1984, ch. 7), which minimise the role played by racial attitudes in the neighbourhood racial transition process.

Further comparisons in Figure 2 reveal that, in this sample at least, the curvature of the estimated white-flight functions generally is not that envisioned by Schelling.<sup>27</sup> Most importantly, their slopes are considerably less at  $p$  values immediately past the tipping-out point. This means that, for wide ranges of racial compositions (for example 40-70 per cent white, using function B in Figure 2), there is very little difference—less than 10 percentage points—between the actual percentage of whites in a neighbourhood and the percentage of them who tolerate the current racial

composition. Put differently, the *rate* of white flight apparently does not accelerate greatly, once the tipping-out point has been exceeded.

### *Integration Management Policies and White Flight*

The results presented in Table 1 allow one to make inferences about how successful the Heights communities were in defusing archetypical patterns of white racial flight. There is no evidence that these integration management programmes succeeded in altering the mobility responses of white residents to a given percentage of blacks in their neighbourhoods, since none of the racial context variables' coefficients proved to be significantly different in the Heights than elsewhere (in preliminary runs wherein they were allowed to vary independently). Furthermore, the policies apparently did not allay the fears of many whites originally residing in the Heights that an 'open community' (perhaps eventually) meant one with an intolerably high percentage of black neighbours. A white turnover rate 16.6 percentage points higher was demonstrated in the Heights, *ceteris paribus*.

These results, however, may not be general for successive periods, if much of the racial turnover observed in the 1970s was due to whites with especially segregationist sentiments fleeing the Heights soon after their policies were enacted. Now that the Heights have established a track record of relatively stable, integrated neighbourhoods,<sup>28</sup> the turnover patterns evidenced during the 1980s may be significantly different. Of course, the above findings should not be interpreted as a general condemnation of the Heights' policies, since their impacts on white as well as black in-migration patterns have not been analysed in this paper.

### *Invasion, Succession and Racial Transition Revisited*

The classical ecological model of spatial

competition between urban racial/ethnic groups suggests that, in response to intensified competition for space within a given racial/ethnic community, some members will 'invade' adjacent territories occupied by those of a different group. Through some (typically unspecified) process involving inter-temporal increases in the housing demand by the invading group and concomitant decreases in that of the original group, occupancy inexorably changes until the invading group 'succeeds' as a majority in the area.

The putative inevitability of succession once substantial invasion has occurred has been challenged by several empirical studies. Goering's (1978) review and Stahura and Hollinger's (1987) study of suburban racial change could find little evidence to support the notion of a single, universal tipping point of racial composition past which succession was inevitable. Similarly, Lee (1985) and Peterman (1989) found numerous census tracts in central cities and suburbs, respectively, that remained integrated in a stable manner during the 1970s.

A comprehensive analysis of changes in the racial composition of neighbourhoods must, of course, involve both in- and out-migration patterns—something that is beyond the scope of the present study (but see Galster, forthcoming). Some of the aforementioned variation in patterns of neighbourhood racial change is undoubtedly due to metropolitan area-wide factors that influence the relative strengths of demands by black and white home-seekers in integrated areas (Goering, 1978; Lee, 1985). The results reported in the current paper concerning out-migration patterns provide, however, some additional clues as to the reasons for these findings. First, there is wide variation in the percentage of black residents that will trigger white flight, depending on the degree of segregationist sentiments held by white residents in the neighbourhood. Second, independently of racial composition there are several other characteristics of a neighbourhood—the

predominance of long-term, home-owning, middle-aged residents of higher-valued dwellings—that can potentially counteract racially motivated out-migration tendencies. Thus, the results suggest that, although certainly possible in some circumstances, it is by no means inevitable that a white-occupied neighbourhood will respond with cumulatively reinforcing spasms of white flight (and associated succession) whenever it is invaded by members of a racial minority group.

### Conclusion

Despite many changes in the context in which racial integration occurs, the out-migration of many whites due only to the racial composition of their neighbourhoods continued in the 1970s, at least in the Cleveland metropolitan area. The highest rates of racially motivated turnover of whites, 1970–80 occurred, *ceteris paribus*, in tracts containing more than 55 per cent black residents in 1970. Communities that adopted strategies to encourage the creation of stable, integrated neighbourhoods evidenced even higher degrees of white flight. This result may, however, have been a reaction to the initiation of the integration management policies, not to their ongoing operation.

Nevertheless, white flight was not a universal response to integration. Cross-tract variations in whites' racial attitudes resulted in major differences in the degree of racially motivated turnover observed over the decade. Specifically, neighbourhoods with levels of segregational sentiments experienced different levels of racially motivated turnover. These results offer support to the hypothesis that a long-term withering of whites' segregationist attitudes<sup>29</sup> would substantially discourage racially motivated white flight and thereby enhance the prospect of stable, racially diverse communities. Furthermore, even where tipping-out points were exceeded, the rate of white flight was relatively modest. This makes it more likely that

public policies designed to achieve a rough racial balance of in-migrating households might succeed in re-creating neighbourhood stability.

Of course, it remains for future investigations to assess whether these results are more general across other metropolitan regions. The Cleveland SMSA is, after all, one of the most segregated in the nation (Taeuber *et al.*, 1984) and atypically has few stable, racially diverse neighbourhoods (Lee, 1985). There are probably regional differences in patterns of racial ecological change as well (Taeuber and Taeuber, 1965, ch. 5).

In addition, there are several other areas in which the present analysis could be expanded upon. Beginning-of-decade tract racial composition is, of course, only an imperfect proxy for the sorts of racial patterns that may ensue at the block level during the decade. Furthermore, it is not clear whether racial composition *per se*, or other attributes and expectations popularly (but often erroneously) associated with it, are the source of white flight (Wolf, 1963; Taub *et al.*, 1984, ch. 7). The role of housing market discrimination has not been investigated here. That is, whites may not choose to flee in the face of prospective integration, but may 'fight to protect their turf' through the erection of discriminatory barriers (Galster, 1987b). Illegal 'blockbusting' actions by unscrupulous agents may also play a crucial role in promulgating white flight in certain circumstances. A more definitive investigation into the role of racial attitudes in the racial turnover process would require disaggregated, explicit survey information on the opinions of individual whites in various racial contexts. Finally, the decade under investigation encompasses only the start-up period for the Heights' integration management policies, and thus the results may reflect transitory adjustments that may not be representative of the impacts of these programmes during the 1980s. The final conclusion is that, far from being an obsolete phenomenon, white racial flight

remains a provocative topic worthy of further sophisticated, policy-oriented investigations.

## Notes

1. Regression studies that have examined more aggregate population flows between central cities and suburbs (Frey, 1979; Marshall, 1979; Goodman and Streitweiser, 1983) have concluded similarly that whites' suburban mobility propensities were not correlated with central city racial composition.
2. Other recent multivariate studies have investigated neighbourhood racial changes but have not disaggregated in- and out-migrations of whites (see Steinnes, 1977; Guest, 1978; Schwab and Marsh, 1980; White 1984).
3. See the opinion poll evidence reviewed by Pettigrew (1973) and Schuman *et al.* (1985).
4. For a complementary rationale as to why the 1970s represent a new context for racial change, see Taub *et al.* (1984, ch. 1).
5. For reviews of supporting evidence on the determinants of intra-urban mobility, see Porell (1982, ch. 2) and Galster (1987a, ch. 8).
6. From 1970–80 the Cuyahoga County white population declined from 1.38m to 1.13m, and the black population rose from 328 000 to 341 000. This resulted in an increase in the percentage of County population black from 19.1 per cent to 22.8 per cent. The pre-1970 history of neighbourhood racial change in the Cleveland area has been traced by Taeuber and Taeuber (1965, ch. 5, Appendix D) and by Schwab and Marsh (1980). For descriptive statistics of racial dynamics in the 1970s in Cleveland, see Lee (1985) and Kain (1985).
7. That is, tracts have 400 or more blacks in 1970.
8. In fact, only four tracts chosen under the second criterion had black percentages in excess of 10 per cent. Thus, there is confidence that data reflect characteristics of the white population.
9. All sampled tracts had identical boundaries in both 1970 and 1980.
10. This turnover measure has been employed by Wilson (1983). The sample extremes of *W*TURNOVER were 0 and 100, with a mean of 62. Note that *W*TURNOVER is not identical to the white out-moving rate, because it over-looks those whites who both move in and leave during the decade and those who move within the same tract.
11. The three NORC items investigated were: (1) "White people have the right to keep blacks out of their neighbourhoods if they want to, and blacks should respect that right"; (2) "A homeowner has the right to sell his/her home to whomever s(h)e wants, even if s(h)e prefers not to sell to blacks"; and (3) "Blacks shouldn't push themselves where they are not wanted". Each item was used in a separate regression, and coefficient estimates were very similar across the three models. The specific coefficient estimates employed in this paper were based on item (1).
12. Detailed regression results are available upon request; they corresponded closely to those of comparable studies (e.g. Middleton, 1976; Wilson, 1984).
13. Of course, there are no census data on alienation, authoritarianism or status discrepancy. Nevertheless, their inclusion in the first stage regression served to reduce the potential bias (from omitted variables) of the coefficients that were employed in the second stage. A remaining bias is possible, however, if any of these omitted predictors of SEG are highly correlated with the included predictors, the difference in estimated SEG scores between any two tracts will differ from the difference in the 'true' scores that would be generated by a complete equation.
14. A variety of interactive and non-interactive specifications were estimated to test the sensitivity of conclusions to model specification. The version reported is the strongest in terms of overall explanatory power and statistically significant variables. Versions where racial context variables were not interacted with SEG and those where only racial context variables interacted with SEG were employed did, however, reveal roughly similar estimates of white-flight functions.
15. With this specification, the coefficient of %BLACK can be positive, but if that for NOBLACKS is negative, the net indicator of when racially motivated turnover begins will be at a positive %BLACK value.
16. These ethnicities were selected because they predominate in Cuyahoga County.
17. The last was practised in Shaker Heights only. For other examples of pro-integrative policies, see Berry (1979) and Goodwin (1979).
18. Trial specifications were run that involved interaction of HEIGHTS with the four racial

- context variables, and with these variables, in turn, interacted with SEG. None ever proved statistically significant, so for simplicity only the dummy variable specification is reported here.
19. Note that lines A–C are drawn only for the range of %BLACK values actually represented in the sample: 0–64 per cent.
  20. For comparison, the Detroit opinion poll of Farley *et al.* (1978) finds that 7 per cent of white households say that they would wish to move if the percentage black in the surrounding 15-house area reached 7 per cent; 24 per cent say they would do so if it reached 20 per cent. The comparable figures for whites who did move during the decade, as estimated from line A in Figure 1, are 0.4 per cent and 0 per cent, respectively. This suggests either that actual white flight in a real situation is much less than prospective flight in a comparable hypothetical situation, and/or that reactions to integration in smaller ‘neighbourhoods’ are stronger than those related to integration at the census-tract level.
  21. For other formulations of neighbourhood racial dynamics, see Schnare and MacRae (1978) and Taub *et al.* (1984, ch. 7).
  22. The term ‘tipping’ was first employed by Grodzins (1958).
  23. Assuming that the percentage of new in-movers who are white is less than the current percentage of whites in the area and that the tolerances of any white in-movers are distributed such that they are no more tolerant than the average white still living in the area.
  24. This tipping dynamic assumes that the proportion of new in-movers who would be white is less than the current percentage of whites, and that the tolerances of any white in-movers are such that they mirror the distribution of those still living in the neighbourhood.
  25. Assuming, of course, that the period is lengthy enough to allow household adjustments. Since a decade is employed here, the condition is undoubtedly fulfilled.
  26. The use of a decadal measurement period unavoidably adds some ambiguity since the turnover spawned by intra-decade changes in racial composition cannot be isolated explicitly from that generated by 1970 values. A similar procedure for deducing tipping-out points from observed racial changes is employed by Hansen (1984), although no multivariate statistical techniques are used to isolate racially induced mobility from other types, and no distinction is made between in- and out-mobility decisions by blacks and whites.
  27. To generate a shape like O–X in Figure 2, the white turnover rate function in Figure 1 must begin at a positive value of %BLACK, and thereafter rise monotonically at an increasing rate. This, in turn, means that the regression coefficients for NOBLACKS and %BLACK are positive, and those for either %BLACK<sup>2</sup> and/or %BLACK<sup>3</sup> are positive (either can be 0; neither negative).
  28. Only one Heights tract became majority-black in the 1970s.
  29. Converse *et al.* (1980, Table 2.8), for example, note that such incidence dropped from 26.5 per cent to 8.3 per cent nationally in 1964–76. A 1985 *Cleveland Plain Dealer* poll found that 54 per cent of respondent whites ‘favored integration of their neighbourhood’, while only 23 per cent opposed it.

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